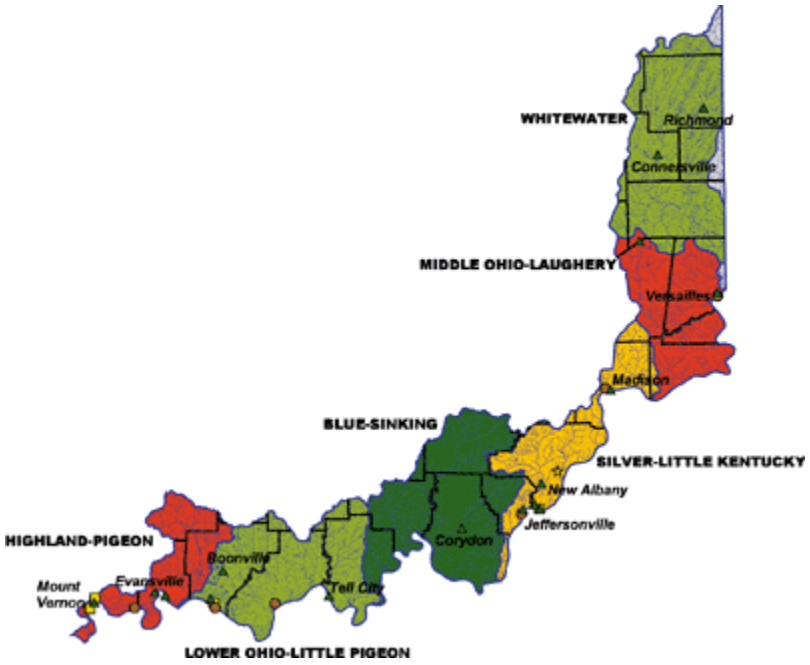
Watershed Restoration Action Strategy for the Blue-Sinking Watershed

Part II: Concerns and Recommendations



Prepared for

Indiana Department of Environmental Management
Office of Water Quality
Watershed Management Section

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Part II, FOREWORD

The Blue-Sinking Watershed Restoration Action Strategy (WRAS) is intended to be a living document designed to assist restoration and protection efforts of stakeholders in their sub-watersheds. As a "living document" information contained within the WRAS will need to be revised and updated periodically.

The WRAS is divided into two parts: Part I, Characterization and Responsibilities and Part II, Concerns and Recommendations.

The first draft of the Blue-Sinking WRAS was released for public review during the spring of 2002. A 60-day public comment period followed the public meetings at which this WRAS document was introduced. This final version of the WRAS includes public comments received during the 60-day comment period. For comments to be included in the final version, they were required to be written and submitted to WHPA, Inc. (the firm contracted to produce this WRAS) during the comment period.

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Part II, Chapter 1: Concerns and Recommendations

Part II of the Watershed Restoration Action Strategy discusses the water quality concerns identified for the Blue-Sinking Watershed and lists recommended management strategies to address these concerns.

Part II includes:

Section 1 - Water Quality Concerns and Priority Issues Identified by Stakeholder Groups

Section 2 - Water Quality Concerns and Priority Issues Identified by State and Federal Agencies

Section 3 - Identification of Impaired Waters

Section 4 - Priority Issues and Recommended Management Strategies

Section 5 - Future Actions and Expectations

1. Water Quality Concerns and Priority Issues Identified by Stakeholder Groups

The Blue-Sinking watershed contains potential stakeholder groups that have different missions (contact information is included in Appendix C). Many of these groups have a long history of working in the Blue-Sinking watershed. The following discussion briefly describes some of the watershed groups.

Natural Resources Conservation Service

The Natural Resources Conservation Service (NRCS), under the U.S. Department of Agriculture (USDA), provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment. The NRCS offers landowners financial, technical, and educational assistance to implement conservation practices on privately owned land. Using this help, farmers, ranchers, and forest landowners apply practices that reduce soil erosion, improve water quality, and enhance crop land, forest land, wetlands, grazing lands, and wildlife habitat. Incentives offered by USDA promote sustainable agricultural and forestry practices, which protect and conserve valuable farm and forest land for future generations. USDA assistance also helps individuals and communities restore natural resources after floods, fires, or other natural disasters.

Soil and Water Conservation Districts

Local Soil and Water Conservation Districts (SWCD) assist land users and residents in the protection and improvement of the local environment. SWCDs can provide technical and financial assistance to local watershed conservation groups.

Hoosier River Watch

Hoosier Riverwatch is a state-sponsored water quality monitoring initiative. The program was started in 1994 to increase public awareness of water quality issues and concerns by training volunteers to monitor stream water quality. Hoosier Riverwatch collaborates with agencies and volunteers to:

- Increase public involvement in water quality issues through hands-on training of volunteers in stream monitoring and

cleanup activities.

- Educate local communities about the relationship between land use and water quality.
- Provide water quality information to citizens and governmental agencies working to protect Indiana's rivers and streams.

Indiana Karst Conservancy

The Indiana Karst Conservancy is a non-profit organization dedicated to the preservation and conservation of Indiana's unique karst features. The IKC was formed by concerned individuals when it was apparent that no similar group was actively protecting such features for their inherent geological, biological, and archaeological importance. The purposes of the IKC are the management, protection, and acquisition of the karst areas in Indiana. The IKC also supports research and promotes education related to karst and its appropriate use.

Lincoln Hills Resource Conservation & Development

RC&D is a unique process that helps people protect and develop their economic, natural, and social resources in ways that improve their area's economy, environment, and quality of life. Local RC&D Councils provide a way for people to plan and implement projects that will make their communities a better place to live. Lincoln Hills RC&D serves Crawford, Perry, Harrison, Spencer, and Washington counties. Their vision is to have a favorable economic climate in harmony with all resources for a higher quality of life. The Fish and Wildlife Resource Committee promotes wildlife food plots by distributing donated seed to landowners. They recently purchased a Warm Season Grasses No Till Drill that can be rented by landowners to improve wildlife habitat by planting warm season grasses that can be used as buffer strips that also protect the land.

River Fields, Inc.

River Fields protects, preserves, and enhances natural and cultural resources of the Ohio River between Westport and West Point on both sides of the River. River Fields advocates appropriate land and water use and urban design. This organization conserves land by acquiring interests in property along the Ohio River and its tributaries. It also educates the community and promotes public involvement in environmental stewardship.

The Blue River Commission

The Blue River Commission is charged by Indiana statute (IC 14-29-7-18) to protect and enhance the natural and scenic qualities of the river in cooperation with the Indiana Department of Natural Resources. The Commission is comprised of two landowners from each of the three counties (Crawford, Harrison, and Washington) within which Blue River has been designated a Natural and Scenic River, and one member from the Department of Natural Resources.

The Nature Conservancy - Blue River

Since 1996, The Nature Conservancy-Blue River Field Office has been working with DNR, IDEM, and NRCS to establish forested buffers along Blue River and its tributaries, in Crawford, Floyd, Harrison, and Washington counties. Including what is scheduled for 2002 the totals are 404 acres at 33 sites representing 14.6 miles of streamside. TNC has also completed three livestock exclusion projects in the Blue River watershed of Washington County, installing several thousand feet of fence and one alternative livestock watering system.

For education TNC sends out a biannual newsletter to all landowners along the Blue River and Indian Creek about conservation practices, incentives, and other items of interest. In their most recent letter they also included the recently updated brochure on groundwater protection entitled, "Sinkholes, Groundwater, and other Mysteries below your feet in Southern Indiana." The circulation of the newsletter is approximately 1200.

Tri-County Nutrient Management Committee

The Washington, Lawrence, and Orange County SWCD's organized to form the Tri-County Nutrient Management Committee (TCNMC) to apply for a 319 grant from IDEM to address nutrient management in the watersheds of the Blue River, Lost River, Muscatatuck River, and East Fork White River. The grant was received and allowed the committee to hire a nutrient management specialist to work with livestock producers, educating them on the need for proper management of animal waste. The TCNMC has completed two demonstration projects and will host several more in the summer of 2002. The committee is working to get a second grant to continue the work with the livestock producers.

Clark County SWCD

The mission of the Clark County SWCD is to inspire community involvement through teaching, leading and providing technical assistance to keep our natural resources abundant, fertile and clean. In the agricultural community, the Clark County SWCD promotes the development of buffer zones and provides conservation technical information and information on conservation programs that are a source of funding.

The Clark County SWCD addresses urban-related challenges, such as stormwater runoff, erosion, and water pollution from automobile oil and suburban lawns, through education, leadership and providing technical assistance. The Backyard Conservation program targets education activities to urban and suburban dwellers. The District, through IDNR, Division of Soil Conservation, provides technical assistance for urban erosion control (Rule 5). This program requires developers to establish and implement an erosion control plan on new developments disturbing 5 or more acres of land. The District has also recently received a 319 grant to promote urban nonpoint source pollution prevention. The District, through the USDA Natural Resources Conservation Service, also provides technical advisory assistance to County and City drainage boards, local planning commissions and other units of government upon request.

The SWCD's Education Coordinator offers assistance and educational resources to schools and community groups, and provides leadership in the District's conservation education/information program. The SWCD's Natural Resources Educational Facility is home to the 50 Trees of Indiana Exhibit, a wetland, the path of a waterdrop exhibit, a butterfly garden and other wildlife plantings and habitat areas. The area is used throughout the year for group programs as well as enjoyed by thousands during the county 4-H fair.

The Clark County SWCD is currently working with the Clark County Solid Waste Management District to set up a household hazardous waste disposal facility which will be open in the fourth quarter of 2002. This will reduce the amount of household hazardous wastes that are improperly disposed of by pouring down the drain or on the ground, negatively affecting water quality. Once the facility is open, the Solid Waste District will be able to assist in quantifying the types and amounts of household hazardous waste diverted from the watershed through collection at the facility.

Clarks Valley Land Trust

Clark's Valley seeks to preserve and enhance the rural character and natural integrity of land in Clark County and neighboring areas through land stewardship. Clark's Valley, affiliated with the Clark County Soil and Water Conservation District, works hand-in-hand with landowners to develop conservation easements to help protect farmland, sensitive areas, and historic sites.

Harrison County USDA-NRCS

The Blue River - Karst Conservation Priority Area was funded through EQIP (Environmental Quality Incentives Program). This area covers portions of Crawford, Harrison, and Floyd Counties. EQIP is administered by USDA's Natural Resources Conservation Service and Farm Service Agency. Typical practices approved for up to 75% cost share include: livestock watering facilities, critical area treatment, heavy use area protection, livestock exclusion (fencing), nutrient management plans, and waste storage structures.

Orange Co. SWCD

The Orange County Soil and Water District was recently awarded a Clean Water Indiana, Lake and River Enhancement Grant to

apply conservation practices in the Lost River karst region of the county. The overall goal of the project is to improve the water quality of Lost River by demonstrating conservation practices that limit the movement of soil and nutrients into the fragile underground system of the Lost River Drainage.

Orange County USDA-NRCS

The Upper Lost River Conservation Priority (CPA) is a cost share program through the Natural Resources Conservation Service that uses Best Management Practices (BMP's) to address soil erosion, water quality, and nutrient management in Orange County.

Part II, Chapter 2: Water Quality Concerns and Priority Issues Identified by State and Federal Agencies

This section presents the combined efforts of state and federal agencies, and universities (such as IDEM, IDNR, USDA-Natural Resources Conservation Service, Ohio River Valley Water Sanitation Commission, Purdue University, Indiana University, Indiana Geologic Survey, and US Geological Survey) to assess water quality concerns and priority issues in the Blue-Sinking Watershed. This multi-organization effort formed the basis of the Unified Watershed Assessment for Indiana. At this time, the Unified Watershed Assessment has been completed for 1998 and updated for 2000-2001.

Indiana's Unified Watershed Assessment (UWA)

The UWA workgroup gathered a wide range of water quality data that could be used to characterize Indiana's water resources. These data were used in 'layers' in order to sort the 8-digit HUC watersheds according to the present condition of the water in lakes, rivers, and streams. The workgroup used only those data which concerned the water column, organisms living in the water, or the suitability of the water for supporting aquatic ecosystems. Each 'layer' of information/data was partitioned by percentiles into scores. The scores ranged between one and five, with a score of one indicative of good water quality or minimum impairment, and a score of five indicating heavily impacted or degraded water quality.

The data layers used in the 1998 and the 2000-2001 update include:

- Lake Fishery: Large-mouth bass community information for lakes
- Stream Fishery: Small-mouth bass community information for streams
- Aquatic Life Use Support: The "livability" of the water column for aquatic life, determined from evaluation of chemical and physical water data, and assessment of aquatic life
- Fish Consumption Advisories: Site specific advisories based on current data
- Fish Index of Biotic Integrity: Based on fish community diversity and fish health
- Qualitative Habitat Evaluation Index: Measure of whether the aquatic habitat is suitable for diverse communities, based on visual observations
- Lake Trophic Scores: Indicator for the rate at which a lake is 'aging' due to inputs of nutrients and other factors
- Sediment Potential: Indicator of potential sediment input to waterbodies in the watershed

The sources and additional information for these data layers include:

- Lake Fishery: From IDNR fisheries surveys of lakes and reservoirs from 1972 to 1994. Raw scores were averaged for all lakes in the watershed
- Stream Fishery: From IDNR fisheries surveys of streams from 1970 to 1994. Raw scores were averaged for all streams in the watershed

- Aquatic Life Use Support: IDEM, Office of Water Quality, Assessment Branch
- Fish Consumption Advisories: ISDH and IDEM, Office of Water Quality, Assessment Branch
- Fish Index of Biotic Integrity: IDEM, Office of Water Quality, Assessment Branch
- Qualitative Habitat Evaluation Index: IDEM, Office of Water Quality, Assessment Branch
- Lake Trophic Scores: Indiana Clean Lakes Program through IDEM, Office of Water Quality, Assessment Branch. This score was based on information gathered from sampling conducted in the 1970's and 1980's

During summer 1999 the UWA workgroup used additional layers of information to identify the resource concerns and stressors for each of the 361 11-digit watersheds in Indiana. Examination of the human activities that have the potential to impact the ecosystem will help planners to focus on those areas where restoration may be most critical. Organizations can identify opportunities to use their programs and resources to address those areas.

This focusing process will illuminate areas where the interests of two or more partner agencies may converge. It is intended that this will lead to more effective allocation of resources for restoration and protection activities. At the local level, this information can assist groups to prioritize watershed activities and provide some discussion points for planning.

This amended assessment has the following benefits:

- Provides a logical process for targeting funds, which may be expanded or updated without changing the basic framework.
- Provides information at a finer resolution (11-digit hydrologic units) to agencies and local groups interested in watershed assessment.
- Identifies data gaps.
- Can be used as a compliment to other assessments, such as the 305(b) Report and 303(d) List.

Table 2-1 and Figure 2-1 show the results of the 2000-2001 UWA for the Blue-Sinking watershed (NRCS & IDEM 2000).

Part II, Chapter 3: Identification of Impaired Waters

Section 303(d) of the Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with federal technology-based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waters. Indiana's 303(d) list was approved by EPA on February 16, 1999.

Once the Section 303(d) list and ranking of waters is completed, the states are required to develop Total Maximum Daily Loads (TMDLs) for these waters in order to achieve compliance with the water quality standards. The TMDL is an allocation that determines the point and nonpoint source (plus margin of safety) load reductions required in order for the waterbody to meet water quality standards. IDEM's Office of Water Quality has and continues to perform point source waste load allocations for receiving waters. Part I of the WRAS briefly outlines IDEM's strategy for developing TMDLs.

Table 0-1 shows the Blue-Sinking Watershed waterbodies that are on Indiana's 1998 Clean Water Act Section 303(d) list submitted and approved by EPA (IDEM 1998, Figure 3-1). The 2002 draft 303(d) list has been completed and the final list will be released in October 2002. The draft 2002 list is not included in this document, but is available from IDEM's Office of Water Quality (http://www.state.in.us/idem/water/planbr/wqs/303d.html)

Part II, Chapter 4: Priority Issues and Recommended Management Strategies

Part I provided the existing water quality information for the Blue-Sinking Watershed and Part II lists priority issues and concerns from local, state, and federal stakeholders in the watershed. This section pulls together the priority issues and concerns held by all stakeholders and recommends management strategies. Underlying all discussions of priority issues and concerns is the fact that improving water quality in the Blue-Sinking Watershed will also enhance the natural and recreational values of the Blue River . Each subsection below focuses on a single priority issue.

4.1 Data/Information and Targeting

The success in restoring water quality in the Blue-Sinking Watershed is fundamentally based on identifying the specific geographic problem areas; identifying all sources contributing to the impairment of the waterbody; and quantifying the contribution of a pollutant by each source.

Recommended Management Strategy 1: Numerous data collection efforts are ongoing in the Blue-Sinking Watershed. This information should be used in prioritizing and targeting specific problems and geographic areas in the watershed. The scale at which targeting and prioritization should occur is the 14-digit HUC watershed area (Figure 2-2 of Part I). Targeting and prioritization will require input from stakeholders living in those geographic areas. The purpose of prioritization and targeting is to enhance allocation of resources in the effort of improving water quality.

Recommended Management Strategy 2: Through the development of Total Maximum Daily Loads (TMDLs) for impaired waterbodies in the Blue-Sinking Watershed, all sources contributing to the impairment of a waterbody will be identified and quantified in terms of their contribution to the waterbody. This includes gathering more data and information on nonpoint sources of water pollution. Throughout the TMDL process, information and feedback from watershed stakeholders will be required in order to generate appropriate allocation scenarios. The result of developing TMDLs will be an understanding of the impact of nonpoint sources on water quality in the watershed.

4.2 Streambank Erosion and Stabilization

The cutting and erosion of streambanks within the Blue-Sinking Watershed is a major concern. This cutting and erosion increases the sediment load in waterbodies and directly impacts the scenic and recreational values of waterbodies in the Blue-Sinking Watershed. Streambank cutting and erosion is often a function of many factors that include stream energy and velocity, flooding, and land management. Increased drainage in headwater streams and ditches increases stream energy during rainfall events and often leads to increased streambank cutting and erosion downstream. Land clearing and urban development also impact volume and velocity of runoff. Hence, this problem is not easily solved.

Recommended Management Strategy 1: Structural stabilization of specific streambank areas in the Blue-Sinking watershed may solve problems on a temporary basis. However, a comprehensive understanding of drainage, stream flows and energies, and land management practices is required to adequately approach this problem. Conservation partners (local, state, and federal) are actively working within their specific geographic areas (typically at the county level); however, this may not facilitate solving the streambank cutting and erosion problems because efforts may not be coordinated between headwater and downstream areas. For example, drainage should take into account the work and efforts of downstream partners to reduce flooding and streambank cutting. Conservation efforts should be in the context of watersheds and span county boundaries in order to account for downstream impacts. Local Drainage Boards, Planning and Zoning Boards, and County Commissioners could effectively address this issue by involving local stakeholders in the decision making process and approaching the issue on a watershed basis.

4.3 Failing Septic Systems and Straight Pipe Discharges

Local county health departments and other stakeholders have identified failing septic systems and straight pipe discharge from septic tanks as significant sources of water pollution in the Blue-Sinking watershed. Straight pipe discharges from septic tanks and septic tanks connected to drainage tiles are illegal (327 IAC 5-1-1.5); however, these practices still exist in the Blue-Sinking watershed.

Recommended Management Strategy 1: The direct impact of communities discharging their septic tank effluent to waterbodies needs to be adequately characterized. This will involve coordination between the Office of Water Quality, local health departments, Indiana State Department of Health, and other stakeholders. The choice to eliminate the illegal discharges will be a cooperative effort between homeowners and local, state, and federal stakeholders.

Recommended Management Strategy 2: Local planning, zoning, and health ordinances could be adopted or strengthened to address this problem during new development. Existing local ordinances could be enforced more vigorously to correct problems with existing systems. Both of these strategies will require input from local stakeholders.

Recommended Management Strategy 3: An education/outreach program on the health and environmental risks of septic system discharges, system maintenance, and system function would provide homeowners and others with basic information to better understand the impacts of inadequate systems. This kind of education effort would involve local health departments, Indiana State Department of Health, IDEM, and other stakeholders. For example, the Arrowhead Country RC&D in northwest Indiana is working on a project to demonstrate proper septic system installation.

4.4 Water Quality - General

The Clean Water Act Section 303(d) list presented in Chapter 3 lists impaired waterbodies for the Blue-Sinking watershed.

Recommended Management Strategy: The Clean Water Act requires states to complete TMDLs for waterbodies listed on the Section 303(d) list. The Office of Water Quality is currently evaluating and exploring the modeling process and data needs required to complete TMDLs for the Section 303(d) listed waterbodies. Completion of a TMDL will involve loading allocations of a pollutant to both point and nonpoint sources. The development of TMDLs will involve meetings with stakeholder groups linked to the Section 303(d) waterbodies. As TMDLs are developed, this Watershed Restoration Action Strategy will be amended to incorporate the final TMDLs.

4.5 Fish Consumption Advisories

As noted in Part I and Part II, fish consumption advisories are concerns within the Blue-Sinking watershed.

Recommended Management Strategy 1: In many cases, the source of the contamination is unknown and may be from atmospheric deposition or some unknown discharge. To address this concern, the cause or source must be identified. Until that is accomplished, the fish consumption advisories should be followed.

4.6 Nonpoint Source Pollution - General

Nonpoint source pollution contributions are often difficult to assess or quantify. They can include sediment deposition from soil erosion, nutrient runoff from animal wastes and commercial fertilizer, herbicide and insecticide runoff, and oil or fuel waste runoff. Degraded wetlands may also contribute to nonpoint source pollution, as their capacity for abatement of runoff and the associated pollutants is diminished or lost. Nonpoint pollution can emanate from agricultural as well as urban lands. Currently, loadings of nonpoint source pollutants to water are often inferred by examination of land use practices, without actual measurements. In addition, the actual water quality impairments related to nonpoint source pollutants have not been well characterized in the Blue-Sinking watershed. Finally, very few regulatory control mechanisms exist to control nonpoint source pollution.

Recommended Management Strategy 1: Through the TMDL development process, the Office of Water Quality will identify, assess, and quantify nonpoint source pollutant loadings to impaired waterbodies. In order to accomplish this task, the Office of Water Quality will work closely with local, state, and federal stakeholders at the watershed and subwatershed level. Loading scenarios for nonpoint source pollutants will be developed by the Office of Water Quality and reviewed by local, state, and federal stakeholders. Implementation of nonpoint source controls will involve a blend of funding assistance and regulatory action, where applicable.

Recommended Management Strategy 2: Numerous funding mechanisms, such as Conservation Reserve Program, Environmental Quality Incentive Program, Lake and River Enhancement program, and 319(h) grants, exist to promote practices to reduce nonpoint source pollution in the watershed. To more efficiently and effectively address nonpoint source pollution in the watershed, the prioritization and targeting discussed previously in Part II should be used to allocate further application of resources.

Recommended Management Strategy 3: The management of urban nonpoint sources can be addressed through effective land use planning and site design. Designs that incorporate less impervious area and more natural infiltration areas have proven effective in reducing urban nonpoint pollution. Local stakeholders working with local planning and zoning authorities, and developers, should implement more stringent site design requirements to reduce nonpoint source contaminants. This effort would be supported by the state and federal stakeholders.

Recommended Management Strategy 4: Practicing the following management measures for NPS pollution abatement may significantly reduce the sediment, nutrient, pesticide and other pollutant contributions to surface waters:
1) Protection of Wetlands and Riparian Areas of those serving a significant NPS pollution abatement function
2) Restoration of Wetlands and Riparian Areas of preexisting functions in damaged and destroyed areas, esp. where the systems will serve significant NPS pollution abatement function
3) Vegetated Treatment Systems (VTS) to promote use of constructed wetlands and vegetated filter strips where these systems will serve significant NPS pollution abatement function
*The information on degraded wetlands as potential contributors to nonpoint source pollution and the management measures for NPS pollution abatement is compiled from the USEPA Draft Guidance entitled "National Management Measures to Protect and Restore Wetlands and Riparian Areas for the Abatement of Nonpoint Source Pollution" (EPA 841-B-01-001 June 2001).

4.6.1 Nonpoint Source Pollution- Education and Outreach

This Watershed Restoration Action Strategy is a beginning point for education and outreach efforts. It compiles existing knowledge about the water resources in this watershed and presents it to the stakeholders who live in the Blue-Sinking watershed. It brings to a public forum the available information and local concerns. However, the education process does not stop with the publication of this document.

Recommended Management Strategy: Local stakeholders, in cooperation with state and federal agencies, need to seek additional information on water quality concerns and issues addressed in this document and make that information available to the public. Additionally, the problems associated with septic failures, soil erosion, land use issues, and riparian zones can be emphasized through meetings, training sessions, and stakeholder group discussions. Field days are excellent ways to present information and encourage discussion. Use of experts with strong background knowledge coupled with local sponsors is an effective method to convey solutions to these problems.

4.7 Point Sources - General

There are 128 active NPDES permitted dischargers, and 0 CSO discharge points in the Blue-Sinking watershed. Additionally there are illegal point source discharges, such as tiles discharging septic tank effluent that exist in the watershed.

Recommended Management Strategy: The Permitting and Compliance Branch of the Office of Water Quality is responsible for issuing and monitoring compliance of NPDES permit holders. Clearly, more emphasis and resources are needed to identify and correct illegal point sources and noncomplying point sources. Improving compliance of NPDES dischargers and identifying illegal dischargers will involve fostering a working relationship with other local, state, and federal stakeholders to monitor compliance and report unusual discharges or stream appearance. In regards to illegal discharges, the Office of Water Quality will work with local, state, and federal stakeholders to identify and eliminate these sources of water pollution.

Part II, Chapter 5: Future Expectations and Actions

As discussed in Part I, this Watershed Restoration Action Strategy is intended to be a fluid document that will be revised or amended as new information becomes available. Section 5.1 discusses expectations derived from the Strategy and how progress will be measured. Specific revisions and amendments to the Watershed Restoration Action Strategy are discussed in Section 5.2. Finally, the Watershed Restoration Action Strategy will be reviewed by all stakeholders before it becomes final, as described in Section 5.3.

5.1 Expectations and Measuring Progress

The Blue-Sinking Strategy provides a starting point to address water quality concerns held by local, state, and federal stakeholders. Part II provides recommended management strategies to address these concerns. Through cooperative efforts with stakeholders, all of the recommended management strategies listed will begin implementation by the summer of 2003.

Measurement of progress is critical to the success of any plan. Water quality improvements will not take place overnight. Measuring of progress in terms of water quality will be provided through the Office of Water Quality Assessment Branch's rotating basin monitoring strategy.

5.2 Expected Revisions and Amendments

This Watershed Restoration Action Strategy is intended to provide a starting point to improve water quality and measure the improvement. Hence, this document will require revisions and amendments as new information becomes available. The future revisions and amendments have been divided into those that are expected within the next year (Section 5.2.1) and those that will occur over a long-term basis (Section 5.2.2).

5.2.1 Short Term Revisions and Amendments

The most significant revisions and amendments will likely occur during 2002 and after, as a result of stakeholder review.

5.2.2 Long Term Revisions and Amendments

The Office of Water Quality is moving toward adopting a watershed management approach to solve water quality problems. Part of the watershed approach is the use of a rotating basin management cycle. The Assessment Branch of the Office of Water Quality has already adopted this rotating basin cycle in its intensive monitoring and assessment of Indiana waterbodies (this is in addition to the already established fixed station monitoring which occurs on a monthly basis). The Watershed Restoration Action Strategy may be revised or amended when sufficient information becomes available.

5.3 Review of the Watershed Restoration Action Strategy

Before this Watershed Restoration Action Strategy becomes final, it will undergo rigorous review. The first stage of review will be performed internally by the Office of Water Quality. Once the Watershed Restoration Action Strategy has been revised to address internal Office of Water Quality comments, it will be circulated to local, state, and federal stakeholders in the watershed. Written comments from local, state, and federal stakeholders will be addressed and the Watershed Restoration Action Strategy will again be revised to incorporate applicable comments. Once internal and external comments have been addressed, the final version of the Watershed Restoration Action Strategy will be released.

Part II Tables

TABLE 2-1: UNIFIED WATERSHED ASSESSMENT FOR THE BLUE-SINKING WATERSHED, 2000-2001

Hydrologic Unit Scores for Each Parameter Used in the Unified Watershed Assessment [2000-2001]															
	Measured Parameters														
11 Digit Hydrologic Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
05140104010	4	nd	nd	nd	nd	nd	nd	4	2	1	2	1	4	1	2
05140104040	nd	nd	nd	nd	nd	nd	nd	4	1	1	2	1	4	1	2
05140104050	4	nd	nd	nd	nd	nd	nd	4	1	1	3	2	4	1	2
05140104070	nd	nd	nd	nd	nd	nd	nd	2	4	1	2	1	4	1	2
05140104080	nd	nd	nd	nd	nd	nd	nd	2	4	1	5	2	3	1	1
05140104090	nd	nd	nd	2	nd	nd	nd	4	1	1	4	2	4	1	2
05140104100	4	nd	nd	4	nd	nd	nd	4	3	1	3	2	4	1	2
05140104110	nd	nd	nd	nd	nd	nd	nd	4	5	1	3	1	4	1	2
05140104120	1	nd	nd	2	nd	nd	nd	4	3	2	2	2	4	1	1
05140104130	nd	nd	nd	nd	nd	nd	2	4	3	1	3	2	4	1	1
05140104140	3	nd	nd	2	nd	nd	nd	5	4	1	2	2	4	1	1
05140104150	4	nd	nd	2	nd	nd	nd	5	4	1	3	2	4	1	2
05140104170	nd	nd	nd	nd	nd	nd	nd	3	4	1	1	2	2	1	1
05140104180	4	nd	nd	nd	1	nd	nd	5	5	1	1	2	2	1	2
05140104190	nd	nd	nd	nd	nd	nd	nd	2	3	1	1	1	3	1	2
05140104200	nd	nd	nd	nd	nd	nd	nd	5	5	1	1	1	3	1	2
05140104210	3	nd	nd	nd	nd	nd	nd	3	4	1	1	1	3	1	2

KEY
Parameters:

1 - Mussel Diversity and Occurrence
2 - Aquatic Life Use Support
3 - Recreational Use Attainment
4 - Stream Fishery
5 - Lake Fishery
6 - Eurasian Milfoil Infestation Status
7 - Lake Trophic Status
8 - Critical Biodiversity Resource
9 - Aquifer Vulnerability
10 - Population Using Surface Water for Drinking Water
11 - Residential Septic System Density
12 - Degree of Urbanization
13 - Density of Livestock
14 - % Cropland
15 - Mineral Extraction Activities

Score range:
1 = good water quality (minimum impairment)
5 = heavily impacted or degraded water quality
nd = no data

(from NRCS & IDEM 2000)

TABLE 0-1: WATERS OF THE BLUE-SINKING ON INDIANA'S 1998 303(D) LIST

ID	Waterbody	Parameter of Concern	Priority for TMDL development
IN-0199FCMRC-1998	BLUE RIVER	FCA - MERCURY	2010-2012
IN-0199FCPCB-1998	BLUE RIVER	FCA - PCBS	2010-2012
IN-0205ECOLI-1998	OHIO RIVER	E. COLI	2000-2004
IN-0205FCPCB-1998	OHIO RIVER	FCA - PCBS	2010-2012
KY21020129-303d1213-1998	OHIO RIVER	PCBS PRIORITY ORGANICS	Second Priority
KY21020490-02-1998	OTTER CREEK	PATHOGENS	First Priority

FCA - Fish Consumption Advisory
PCB - Polychlorinated Biphenyls
Hg - Mercury

***Only waters for which fish tissue data support issuance of fish consumption advisories are individually cited above. The Indiana Department of Health has issued a general fish consumption advisory for all other waters of the state. This advisory was based on extrapolation of the fish tissue data that were available and generally recommends that if no site-specific advisory is in place for a waterbody, the public should eat no more than one meal (8 oz.) per week of fish caught in these waters. Women of child bearing age, women who are breast feeding, and children up to 15 years of age should eat no more than one meal per month. The basis for this general advisory is widespread occurrence of mercury or PCBs (or both) in most fish sampled throughout the state. Please refer to the most recent Fish Consumption Advisory booklet available through the Indiana Department of Health (317/233-7808). Sources of the mercury and PCBs are unknown for the most part, but it is suspected that they result from air deposition.

APPENDIX B

BLUE-SINKING WATERS ASSESSED IN THE

CLEAN WATER ACT SECTION 305(B) REPORT

Statewide data from the state's Clean Water Act Section 305(B) Report are available at the link below (IDEM's Office of Water Quality website) (http://www.state.in.us/idem/water/planbr/wqs/quality.html). Adobe Acrobat Reader(tm) is required to read these files.

- **Attachment A** - 1998 305 (B) Report (Upper White, Lower White, Patoka)
- **Attachment B** - 1999 & 2000 305 (B) Report (Eel-Wabash, Lower East Fork White, Middle Wabash-Deer, Muscatatuck, Salamonie, Upper East Fork White, Upper Wabash, Whitewater)
- **Attachment C** - 2001 305 (B) Report (Lower Wabash, Middle Wabash-Busseron, Middle Wabash-Little Vermilion, Sugar)
- **Attachment D** - 2002 305 (B) Report (Blue-Sinking, Little Calumet-Galien, Lower Ohio-Little Pigeon, Silver-Little Kentucky, St. Joseph-Maumee)

APPENDIX C

Potential Stakeholders

in the Blue-Sinking Watershed

Big Blue River of the Ohio Association, Inc.
1430 S. Wyandotte Cave Road
PO Box 6
Milltown, IN 47130

Buffalo Trace Land Trust, LLC
PO Box 2
Mount Saint Francis, Indiana 47146-0002
812-923-8453

Driftwood State Fish Hatchery
4931 S. CR 250 W.
Vallonia , IN 47281
812-358-4110

Hoosier Environmental Council
PO Box 1145
Indianapolis, IN 46206
317-685-8800

Hoosier River Watch
5785 Glenn Rd.
Indianapolis, Indiana 46216-1066
317-541-0617

Indiana Karst Conservancy
PO Box 2401
Indianapolis, IN 46206-2401
317-882-5420

Indiana Lakes Management Society
207 S. Wayne St., Suite B
Angola, IN 46703

Indiana Waterways Association
301 Fort Harrison Road
Terre Haute, IN 47804
812-460-1567

Izaak Walton League of America
Indiana Division President
2173 Pennsylvania Street
Portage, IN 46368-2448
219-762-4876

Knob & Valley Audubon Society
P.O. Box 556
New Albany, IN 47150
Know Your Watershed

Conservation Technology Information Ctr
1220 Potter Drive, Room 170
West Lafayette, IN 47906-1383
765-494-9555

Lincoln Hills Resource Conservation & Development
Courthouse Annex
125 South 8th Street
Cannelton, IN 46520-1251
812-547-7028

National Audubon Society
700 Broadway
New York, NY 10003
212-979-3000

Ohio River Conservancy
1020 N. Indiana
Bloomington, IN 47408-2041
812-331-8193

River Fields, Inc.
643 W. Main St. Suite 200
Louisville, IN 40202-2921
502-583-3060

Sugar Ridge Fish and Wildlife Area
2310 E. State Road 364
Winslow, IN 47598
812-789-2724

The Blue River Commission
c/o Denny C. Cox, Chairman
2104 Lake Street
New Albany, IN 47150

The Nature Conservancy
1505 N. Delaware St., Suite 200
Indianapolis, Indiana 46202
317-951-8818

The Nature Conservancy - Blue River
PO Box 5
Corydon, Indiana 47112
812-738-2087

Tri-County Nutrient Management Committee
c/o Washington County USDA-NRCS
103 E. Westminster Center, Suite 115
Salem, IN 47167-9731
812-883-3704

Clark County Commissioner (Clark County)
501 E. Court Avenue
Jeffersonville, IN 47130
812-285-6275

Clark County Health Department (Clark County)
1216 Akers Ave.
Jeffersonville, IN 47130
812-282-7521

Clark County Purdue Univ. Co-op Extension Service (Clark County)
9608 Hwy 62, Suite 1
Charlestown, IN 47111
812-256-4591

Clark County SWCD (Clark County)
9608 Highway 62
Charlestown, IN 47111
812-256-2330x3

Clark County Sewer Department (Clark County)
501 E. Court Avenue
Jeffersonville, IN 47130
812-285-6451

Clark County Solid Waste Management District (Clark County)
9208 Highway 62
Charlestown, IN 47111-8409
812-256-7942

Clark County Surveyor (Clark County)
501 E. Court Avenue
Jeffersonville, IN 47130
812-285-6281

Clark County US Farm Service Agency (Clark County)
Charlestown Service Center
9608 Highway 62
Charlestown, IN 47111
812-256-2330

Clark County USDA-NRCS (Clark County)
Charlestown Service Center
9608 Highway 62
Charlestown, IN 47111
812-256-2330

Clarks Valley Land Trust (Clark County)
9608 Hwy 62
Charlestown, Indiana 47111
812-256-2330

Jeffersonville City Mayor (Clark County)
501 E. Court Avenue
4th Floor
Jeffersonville, IN 47130
812-285-6400

Crawford Co. SWCD (Crawford County)
306 Oak Hill Drive
English, IN 47118
812-338-3224

Crawford County Commissioner (Crawford County)
P.O. Box 316
English, IN 47118
812-338-2142

Crawford County Government Offices (Crawford County)
Crawford County Courthouse
316 South court
English, IN 47118
812-338-2142

Crawford County Health Department (Crawford County)
306 Oak Hill Circle
English, IN 47118
812-338-2302

Crawford County Purdue Univ. Co-op Extension Service (Crawford County)
306 Oak Hill Circle
English, IN 47118
812-338-2352

Crawford County Surveyor (Crawford County)
316 South Court
English, IN 47118
812-338-2142

Crawford County US Farm Service Agency (Crawford County)
Corydon Service Center
1855 Gardner Ln NW
Corydon, IN 47112
812-738-8123

Crawford County USDA-NRCS (Crawford County)
Corydon Service Center
1855 Gardner Ln NW
Corydon, IN 47112
812-738-8123

Crawford County Water Co. (Crawford County)
808 E. Buzzard Roost Rd.
Leavenworth, IN 47137
812-365-9528

Leavenworth Water Company (Crawford County)
500 W. Court St.
Leavenworth, IN 47137
812-739-1221

Marengo Water Department (Crawford County)
117 Water St.
Marengo, IN 47140

City of New Albany Mayor (Floyd County)
City County Building
Room 316
New Albany, IN 47150
812-948-5333

Edwardsville Water Corporation (Floyd County)
542 Maplewood Blvd
Georgetown, IN 47122
812-948-0900

Floyd Co. SWCD (Floyd County)
City County Bldg
New Albany, IN 47150
812-945-9936

Floyd County Commissioner (Floyd County)
City County Building
Room 214
New Albany, IN 47150
812-948-5466

Floyd County Health Department (Floyd County)
1917 Bono Road
New Albany, IN 47150
812-948-4726

Floyd County Purdue Univ. Co-op Extension Service (Floyd County)
311 West 1st St.
New Albany, IN 47150
812-948-5470

Floyd County Surveyor (Floyd County)
City County Building
311 Hauss Square
New Albany, IN 47150
812-948-5490

Floyd County US Farm Service Agency (Floyd County)
Corydon Service Center
1855 Gardner Ln NW
Corydon, IN 47112
812-738-8123

Floyd County USDA-NRCS (Floyd County)
Corydon Service Center
1855 Gardner Ln NW
Corydon, IN 47112
812-738-8123

Georgetown Water Department (Floyd County)
9710 SR 64
Georgetown, IN 47122
812-951-3113

Greenville Water (Floyd County)
5525 Featheringill Rd.
Galena, IN 47124
812-923-9821

Corydon Water Works (Harrison County)
55 Loweth Ave.
Corydon, IN 47112
812-738-4649

Elizabeth Water Company (Harrison County)
5085 Main St. SE
Elizabeth, IN 47117
812-969-2025

Harrison Co. SWCD (Harrison County)
1855 Gardner Lane
Corydon, IN 47112
812-738-8124

Harrison County Commissioner (Harrison County)
c/o Harrison County Auditor
300 N. Capitol Ave, Room202
Corydon, IN 47112
812-738-8241

Harrison County Council (Harrison County)
c/o Auditor
300 N Capitol Ave
Corydon, IN 47112
812-738-8241

Harrison County Health Department (Harrison County)
245 Atwood St. N Wing
Corydon, IN 47122
812-738-3237

Harrison County Purdue Univ. Co-op Extension Service (Harrison County)
124 S. Mulberry St.
Corydon, IN 47112
812-738-4236

Harrison County Solid Waste Mngmnt District (Harrison County)
300 North Capitol Ave.
Corydon, IN 47112
812-738-8415

Harrison County Surveyor (Harrison County)
300 N Capitol Ave
Corydon, IN 47112
812-738-3206

Harrison County Town Council President (Harrison County)
113 N Oak Street
Corydon, IN 47112
812-738-3958

Harrison County US Farm Service Agency (Harrison County)
Corydon Service Center
1855 Gardner Ln NW
Corydon, IN 47112
812-738-8123

Harrison County USDA-NRCS (Harrison County)
Corydon Service Center
1855 Gardner Ln NW
Corydon, Indiana 47112
812-738-8123

Lanesville Water Works (Harrison County)
6700 Highway 62 NW
P.O. Box 6
Lanesville, IN 47136-0006
812-952-3037

Palmyra Water Works (Harrison County)
14225 Huff Street
P.O. Box 332
Palmyra, IN 47164
812-364-6106

South Harrison Water Company (Harrison County)
2381 New Middletown Rd. SE
New Middletown, IN 47160
812-968-3425

Orange Co. SWCD (Orange County)
573 SE Main Street
Paoli, IN 47454
812-723-3311

Orange County Commissioner (Orange County)
c/o Orange County Auditor
205 E. Main St., Suite 1
Paoli, IN 47454
812-723-3600

Orange County Government Office (Orange County)
205 E. Main St.
Paoli, IN 47454
812-723-3600

Orange County Health Department (Orange County)
205 E. Main St.
Paoli, IN 47454
812-723-7112

Orange County Purdue Univ. Co-op Extension Service (Orange County)
205 E. Main St.
Suite 4
Paoli, IN 47454
812-723-7107

Orange County Surveyor (Orange County)
205 E. Main St.
Paoli, IN 47454
812-723-3600

Orange County US Farm Service Agency (Orange County)
Paoli Service Center
573 SE Main Street
Paoli, IN 47454
812-723-3311

Orange County USDA-NRCS (Orange County)
Paoli Service Center
573 SE Main Street, Suite 1
Paoli, IN 47454
812-723-3311

Paoli Town Council President (Orange County)
110 N. Gospel
Paoli, IN 47454
812-723-2739

Perry Co. SWCD (Perry County)
125 South 8th Street
Cannelton, IN 47520
812-547-4686

Perry County Commissioner (Perry County)
c/o Courthouse Administrator
2219 Payne St.
Tell City, IN 47586
812-547-6427

Perry County Government Offices (Perry County)
Perry County Courthouse
2219 Payne St.
Tell City, IN 47586-2830
812-547-6427

Perry County Health Department (Perry County)
8th St. Courthouse Annex
Cannelton, IN 47520
812-547-2746

Perry County Purdue Univ. Co-op Extension Service (Perry County)
125 S. 8th St.
Cannelton, IN 47520
812-547-7084

Perry County Surveyor (Perry County)
General Delivery
Saint Croix, IN 47576
812-843-5751

Perry County US Farm Service Agency (Perry County)
Rockport Service Center
201 Elm St.
Rockport, IN 47635
812-649-9136

Perry County USDA-NRCS (Perry County)
Rockport Service Center
201 Elm St.
Rockport, IN 47635
812-649-9136

Scott County SWCD (Scott County)
656 S. Boatman Road
Scottsburg, IN 47170
812-752-2269

Tell City Water Department (Spencer County)
4th and Fulton St.
Tell City, IN 47586
812-547-7437

City of Salem Mayor (Washington County)
38 Public Square
Salem, IN 47167
812-883-4265

East Washington Rural Water (Washington County)
209 W. Walnut St.
Salem, IN
812-883-6429

Posey Township Water Corp. (Washington County)
P.O. Box 65
Hwy 50
Hardinsburg, IN 47125
812-472-3432

Salem Water Works (Washington County)
38 Public Square
Salem, IN 47167
812-752-1980

Washington County Commissioner (Washington County)
County Courthouse
99 Public Square
Salem, IN 47167
812-883-4805

Washington County Government Office (Washington County)
County Courthouse
99 Public Square
Salem, IN 47167
812-883-4805

Washington County Health Department (Washington County)
103 Westminster Ctr
Ste 114
Salem, IN 47167
812-883-5603

Washington County Landfill (Washington County)
2682 N. Highland Rd
Salem, IN
812-883-4811

Washington County Purdue Univ. Co-op Extension Service (Washington County)
806 Martinsburg Rd.
Suite 104
Salem, IN 47167
812-883-4601

Washington County SWCD (Washington County)
103 E. Westminster Center, Suite 115
Salem, IN 47167
812-883-3704

Washington County Solid Waste Mngmnt District (Washington County)
Courthouse
92 Public Square
Salem, IN 47167
812-883-3039

Washington County Surveyor (Washington County)
99 Public Square
Salem, IN
812-883-4604

Washington County US Farm Service Agency (Washington County)
Salem Service Center
2 E. Westminster Center
Salem, IN 47167-9731
812-883-3006

Washington County USDA-NRCS (Washington County)
103 E. Westminster Center, Suite 115
Salem, IN 47167-9731
812-883-3704

STATE STAKEHOLDERS

Indiana Farm Bureau Inc.
225 S East St
Indianapolis, IN 46202
(317) 692-7851

Indiana Department of Environmental Management
100 N. Senate Ave
P.O. Box 6015
Indianapolis, IN 46206-6015

IDEM Switchboard
(317) 232 8603 or (800) 451 6027

Agricultural Liaison
(317) 232 8587

Air Quality
(317) 233 0178

Community Relations
(317) 233 6648

Compliance and Technical Assistance
(317) 232 8172

Criminal Investigations
(317) 232 8128

Enforcement
(317) 233 5529

Environmental Response
(317) 308 3017

Legal Counsel
(317) 232 8493

Media and Communication Services
(317) 232 8560

Pollution Prevention and Technical Assistance
(317) 232 8172

Solid and Hazardous Waste Management
(317) 233 3656

Water Management
(317) 232 8670

Indiana Department of Natural Resources
402 West Washington Street
Indianapolis, IN 46204 2748

Division of Engineering
(317) 232 4150

Division of Entomology and Plant Pathology
(317) 232 4120

Division of Fish & Wildlife
(317) 232 4080

Division of Forestry
(317) 232 4105

Division of Historic Preservation & Archaeology
(317) 232 1646

Division of Law Enforcement
(317) 232 4010

Division of State Parks and Reservoirs
(317) 232 4124

Division of Water
(317) 232 4160

Division of Public Information and Education
(317) 232 4200

Division of Reclamation
(317) 232 1547

Division of Safety and Training
(317) 232 4145

Division of Soil Conservation
(317) 233 3870

Division of Oil and Gas
(317) 232 4055

Division of Outdoor Recreation
(317) 232 4070

Division of Nature Preserves
(317) 232 4052

Indiana State Department of Health
2 North Meridian St.
Indianapolis, IN 46204
(317) 233 1325

FEDERAL STAKEHOLDERS

Natural Resources Conservation Service
6013 Lakeside Blvd
Indianapolis, In 46278
(317) 290 3200
NRCS Field Representatives are generally located with the SWCD office in each county.

U.S. EPA Region 5
77 West Jackson Blvd
Chicago, IL 60604
(312) 353-2000
(800) 632-8431

U.S. Army Corps of Engineers

Chicago District
111 N. Canal
Chicago, IL 60606
(312) 353-6400

Detroit District
P.O. Box 1027
Detroit, MI 48231-1027
(888) 694-8313

Louisville District
600 Dr. Martin Luther King, Jr.
Louisville, KY 40202
(502) 315-6768

APPENDIX D

FUNDING SOURCES

This listing of funding sources was derived from the May 1999 *Watershed Action Guide for Indiana*, which is available from the Watershed Management Section of IDEM (IDEM 1999b).

FEDERAL CONSERVATION AND WATERSHED PROGRAMS

Environmental Protection Agency

Section 319, 205(j), and 104(b)(3) Grants

Grants for conservation practices, water body assessment, watershed planning, and watershed projects. Available to non-profit or governmental entities. These monies, enabled by the Clean Water Act, are funneled through the Indiana Department of Environmental Management. *For details see IDEM below.*

EPA Great Lakes Program

Numerous sources of funding are available for the area that drains into the Great Lakes. The complete grants guidance and application package for EPA Great Lakes grants is on the web, and additional funding sources are at the Great Lakes Information Network (http://www.great-lakes.net/). Grants are submitted in early spring for most of these sources.

U.S. Department of Agriculture/Natural Resources Conservation Service (NRCS) (See Appendix C for local federal agency contacts.)

CRP: Conservation Reserve Program.

Administered by the Farm Service Agency with technical assistance from NRCS. Conservation easements in certain critical areas on private property. CRP encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filterstrips, or riparian buffers. Easements are for 10 or 15 years, depending on vegetative cover, and compensation payments are made yearly to replace income lost through not farming the land. Cost share is available for planting vegetative cover on restored areas. http://www.fsa.usda.gov/dafp/cepd/crp.htm

EQIP: Environmental Quality Incentive Program.

Administered by the NRCS. Provides technical, financial, and educational assistance. Conservation cost-share program for implementing Best Management Practices, available to agricultural producers who agree to implement a whole-farm plan that addresses major resource concerns. Up to $50,000 over a 5- to 10- year period. Some parts of the state are designated Conservation Priority Areas and receive larger funding allotments.
http://www.nhq.nrcs.usda.gov/PROGRAMS/COD/cit/eqipsmry.htm

FIP: Forestry Incentive Program.

Administered by the NRCS. Assists forest management on private lands of at least 10 acres and no more than 1,000 acres. Eligible practices are tree planting, timber stand improvement, site preparation for natural regeneration, and other related activities. Land must be suitable for conversion from nonforest to forest land, for reforestation, or for improved forest management and be capable of producing marketable timber crops. Cost share up to 65%, with a maximum of $10,000 per person per year. http://www.nhq.nrcs.usda.gov/CCS/FB96OPA/FIPfact.html

Small Watershed Program.

The Small Watershed Program works through local government sponsors and helps participants solve natural resource and related economic problems on a watershed basis. Projects include watershed protection, flood prevention, erosion and sediment

control, water supply, water quality, fish and wildlife habitat enhancement, wetlands creation and restoration, and public recreation in watersheds of 250,000 or fewer acres. Both technical and financial assistance are available. http://www.ftw.nrcs.usda.gov/pl566/pl566.html

WRP: Wetland Reserve Program.

Administered by the NRCS. Easement and restoration program to restore marginal agricultural land to wetland. Easements may be for 10 years, 30 years, or permanent. Longer easements are preferred. Partnerships with other acquisition programs are encouraged. Restoration and legal costs are paid by NRCS. Landowner retains ownership of the property and may use the land in ways that do not interfere with wetland function and habitat, such as hunting, recreational development, and timber harvesting. http://www.nhq.nrcs.usda.gov/PROGRAMS/wrp/

WHIP:Wildlife Habitat Incentive Program.

Administered by the NRCS. Cost share and technical assistance to develop and improve wildlife habitat on private land. Private landowners who are agricultural producers are eligible. A wildlife habitat plan is developed that describes landowner's goals for improving wildlife habitat, includes a list of practices and schedule for installing them, and details the steps necessary for maintenance. Cost share up to 75%, and contracts are for 10 years. http://www.nhq.nrcs.usda.gov/PROGRAMS/whip/

U.S. Fish & Wildlife Service

Partners for Wildlife Habitat Restoration Program

Provides technical and financial assistance to private landowners through voluntary cooperative agreements in order to restore formerly degraded wetlands, native grasslands, riparian areas, and other habitats to conditions as natural as feasible. Landowners agree to maintain restoration projects as specified in the agreement but otherwise retain full control of the land. Agreements are for fixed term of at least 10 years. No more than 60% of project cost is paid by Federal moneys (the program seeks remainder of cost share from landowners and nationally-based and local entities). http://www.fws.gov/

STATE CONSERVATION AND WATERSHED PROGRAMS

IDNR Division of Soil Conservation

LARE: Lake & River Enhancement Program

Funds diagnostic and feasibility studies in selected watersheds and cost-share programs through local Soil & Water Conservation Districts. Project oversight provided through county-based Resource Specialists and Lake & River Enhancement Watershed Coordinators. Funding requests for Watershed Land Treatment projects must come from Soil & Water Conservation Districts. If a proposed project area includes more than one district, the affected SWCDs should work together to develop an implementation plan. The SWCDs should then apply for the funding necessary to administer the watershed project. Before applying for funding, the SWCDs should contact the Lake & River Enhancement Coordinators to determine (1) the appropriate watershed to include in the project, (2) if the proposed project meets the eligibility criteria, and (3) if funding is available. http://www.in.gov/dnr/soilcons/lare.htm

IDNR Division of Fish & Wildlife

Classified Wildlife Habitat Program

Incentive program to foster private wildlife habitat management through tax reduction and technical assistance. Landowners need 15 or more acres of habitat to be eligible. IDNR provides management plans and assistance through District Wildlife Biologists (see county listings). http://www.ai.org/dnr/fishwild/about/habitat.htm

IDNR Division of Forestry

Classified Forest Program

Incentive program to foster private forest management through tax reduction and technical assistance. Landowners need 10 or more acres of woods to be eligible. IDNR provides management plans and assistance through District Foresters (see county listings). http://www.state.in.us/dnr/forestry/landassist/clasfor.htm

Classified Windbreak Act

Establishment of windbreaks at least 450 feet long adjacent to tillable land. Provides tax incentive, technical assistance through IDNR District Foresters.

Forest Stewardship Program & Stewardship Incentives Program

Cost share and technical assistance to encourage responsibly managed and productive private forests.
http://www.state.in.us/dnr/forestry/htmldocs/grants.htm

IDNR Division of Reclamation

Appalachian Clean Streams Initiative

Funds for acid mine drainage abatement.

IDNR Division of Nature Preserves

State Nature Preserve Dedication

Acquisition and management of threatened habitat. http://www.in.gov/dnr/naturepr/

IDEM Office of Water Quality

State Revolving Fund

Available to municipalities and counties for a range of water quality infrastructure projects. Funds are available for a wide variety of projects including all types of nonpoint source management projects, as well as more traditional wastewater treatment projects. Funding is through very low-interest loans. http://www.in.gov/idem/water/fasb/srflp.html

Section 319 Grants - Nonpoint Source Program

Available to nonprofit groups, municipalities, counties, and universities for implementing water quality improvement projects that address nonpoint source pollution concerns. Twenty-five percent match is required, which may be cash or in-kind. Maximum grant amount for local watershed projects is $112,500, but statewide or larger scale projects may be funded up to $300,000. Projects are usually two to three years in length. Projects may be for land treatment through implementing Best Management Practices, for education, and for developing tools and applications for state-wide use. Proposals are due October 1, 2002 for FY2003 funds. See Section 5.1.5 for more details. http://www.in.gov/idem/water/planbr/wsm/index.html

Section 205(j) Grants - Water Quality Management Planning Program

Available to municipalities, counties, conservation districts, drainage districts, and other public organizations. For-profit entities, non-profit organizations, private associations, and individuals are not eligible for funding through Section 205(j). Grants are for water quality management projects such as studies of nonpoint pollution impacts, nonagricultural NPS mapping, and the development and implementation of watershed management projects. Funds can be requested for up to $100,000 and no match is required. http://www.in.gov/idem/water/planbr/wsm/index.html

Section 104(b)(3) Grants - NPDES Related State Grant Program

Provide for developing, implementing and demonstrating new concepts or requirements that will improve the effectiveness of the NPDES permit program. A project proposed for assistance by this program should deal predominantly with water pollution

sources and activities regulated by the NPDES program. These may include innovative demonstration projects to promote statewide watershed approaches for permitted discharges, development of storm water management plans by small municipalities, projects involving a watershed approach to municipal separate sewer systems, and projects that directly promote community based environmental protection. Available to State water pollution control agencies, interstate agencies, Tribes, colleges and universities, and other public or nonprofit organizations. For-profit entities, private associations and individuals are not eligible to receive this assistance. Funds can be requested for up to $100,000. Five percent match is required, either cash or in-kind. http://www.in.gov/idem/water/planbr/wsm/index.html

NOTE: proposals are due to IDEM by January 31 annually for projects beginning the following December.

PRIVATE FUNDING SOURCES

National Fish and Wildlife Foundation

1120 Connecticut Avenue, NW Suite 900, Washington DC 20036. (http://www.nfwf.org/programs/grant_apply.htm)

Nonprofit, established by Congress 1984, awards challenge grants for natural resource conservation. Federally appropriated funds are used to match private sector funds. Six program areas include wetland conservation, conservation education, fisheries, migratory bird conservation, conservation policy, and wildlife habitat.

Individual Utilities

Check local utilities such as IPALCO, CINergy, REMC, NIPSCO. Many have grants for educational and environmental purposes (IPALCO Golden Eagle Program - http://www.ipalco.com/ABOUTIPALCO/Environment/Golden_Eagle/2001_Winners.html; CINergy - http://www.cinergy.com/Environment/default.asp).

Indiana Hardwood Lumbermen's Association

Indiana Tree Farm Program. http://www.ihla.org/leaders.htm

Conservation Technology Information Center (CTIC)

'Know Your Watershed' educational materials are available. http://www.ctic.purdue.edu/CTIC/CTIC.html

Ducks Unlimited

Land acquisition and habitat restoration assistance. http://www.ducks.org/

National Wild Turkey Federation

Funds for turkey and wildlife habitat improvement projects. http://www.nwtf.org/

Quail Unlimited

Funds for quail and wildlife habitat improvement projects. http://www.qu.org/

Pheasants Forever

Land acquisition and funds for local habitat improvement projects. http://www.pheasantsforever.org/

Indiana Heritage Trust

Land acquisition programs. http://www.state.in.us/dnr/heritage/

The Nature Conservancy

Land acquisition and restoration. http://nature.org/wherewework/northamerica/states/indiana/

Southern Lake Michigan Conservation Initiative

Blue River Focus Area

Kankakee Sands Focus Area

Upper St. Joseph River Focus Area

Tippecanoe River Focus Area

Natural Areas Registry

Hoosier Landscapes Capitol Campaign

Local/Regional Land Trusts

Land acquisition, conservation easements, and restoration

Acres Inc. (Fort Wayne, IN)

- http://www.acres-land-trust.org/

Buffalo Trace Land Trust, LLC (Mount Saint Francis, IN)

Central Indiana Land Trust, Inc. (Indianapolis, IN)

- http://www.cilti.org/

Clark's Valley Land Trust (Charlestown, IN)

- http://www.clarkswcd.org/LandTrust/LandTrusthome.htm

Indiana Karst Conservancy (Indianapolis, IN)

- http://www.caves.org/conservancy/ikc/

Laporte County Conservation Trust Inc. (La Porte, IN)

Little River Wetlands Project (Ft. Wayne, IN)

- http://www.lrwp.org/

Mud Creek Conservancy (Indianapolis, IN)

- http://www.mudcreekconservancy.org/

NICHES Land Trust (Lafayette, IN)

- http://dcwi.com/~niches/

Ohio River Conservancy (Bloomington, IN)

Oxbow, Inc. (Cincinnati, OH)

- http://math.uc.edu/~pelikan/OXBOW/wm.html

Red-tail Conservancy, Inc. (Muncie, IN)

- http://ourworld.cs.com/rtconserv1/id18.htm

River Fields, Inc. (Louisville, KY)

- http://www.riverfields.org/

Shirley Heinze Environmental Fund (Michigan City, IN)

- http://www.heinzefund.org/

Sycamore Land Trust (Bloomington, IN)

- http://www.sycamorelandtrust.org/

Wabash Heritage Land Trust (New Harmony, IN)

Wawasee Area Conservancy Foundation (Syracuse, IN)

- http://www.wacf.com/

Whitewater Valley Land Trust, Inc. (Centerville, IN)

Wood-Land-Lakes Resource Conservation & Development (Kendallville, IN)

- http://www.in.nrcs.usda.gov/conservation%20programs/rcd/woodland_lakes.htm

SOURCES OF ADDITIONAL FUNDING OPPORTUNITIES

Catalog of Federal Funding Sources for Watershed Protection

EPA Office of Water (EPA841-B-99-003) December 1999

(http://www.epa.gov/owow/watershed/wacademy/fund.html)

GrantsWeb:

http://www.srainternational.org/cws/sra/resource.htm

APPENDIX E

STAKEHOLDER COMMENTS

The following comments were received within the 60-day public comment period after the initial public meeting introducing the draft version of the Blue-Sinking WRAS. This meeting was held on March 12, 2002, at the Corydon Public Library in Corydon, Indiana. A second public meeting was held for this WRAS on March 27, 2002, at the New Albany-Floyd County Public Library in New Albany, Indiana.

The Blue-Sinking WRAS has been revised to incorporate stakeholder comments, where appropriate. The following is a reproduction of the stakeholder comments:

General Comments

- You have missed one of the oldest active groups involved in protection and stewardship of the Blue River frontage the Big Blue River of the Ohio Landowners Association. This organization represents the landowners along the Blue River and other persons concerned with its protection, myself included. Their mailing address is:

  Big Blue River of the Ohio Landowners Association
  PO Box 6
  Milltown, Indiana 47145

- Prior to 1975 negotiations as well as confrontation between landowners and the Indiana Department of Natural Resources regarding the care and condition of the Big Blue River of the Ohio were to say the least strained. In 1975 an organization was formed by the riparian landowners in coordination with the INDNR to mitigate the deadlock between the parties as to the management of the Blue River. What transpired thereafter, I think, is one of the best examples of self-management for the preservation of a natural resource which can be documented.

  The establishment of the "Big Blue River of the Ohio Association, Inc." in concert with the INDNR lead to the passage of the acts codified in IC 13-2-27 (P.L. 76 Sec. 1. 1978) River Commissions. In 1995 this was redesignated as IC 14-29-7. The Blue River Commission was formed, and with it the establishment of a "...memorandum of understanding for the management and preservation of the natural and scenic qualities of the river. (IC 14-29-7-16)" The Blue River Commission is charged to "...protect and enhance the natural and scenic qualities of the river in cooperation with the department. (IC 14-29-7-18)"

  The integral part of this experiment in self regulation is the Big Blue River of the Ohio Association, Inc. membership from which the Blue River Commission members are drawn. In effect, landowners protecting their own environmental assets.

  We are, therefore, the greatest stakeholders in the preservation of our Blue River environment. We have in good faith negotiated with the INDNR to keep the MOU within established IC parameters and still maintain property/riparian rights while protecting the Blue River.

  Please add to your list of stake holders for the Blue River:
  Big Blue River of the Ohio Association, Inc.
  1430 S. Wyandotte Cave Road
  Milltown, IN 47130

  Mailing address:
  Big Blue River of the Ohio Association, Inc.
  PO Box 6
  Milltown, IN 47130

Specific Comments

Part I:

- Page 11. The native vegetation of this area was not entirely mixed hardwood forest. In fact, a significant portion of the watershed, perhaps 80,000 or more acres, was originally grassland known as the barrens.
- Page 45. Mosquito Creek does not drain to the East Fork of White River. It drains directly to the Ohio River.
- Page 46. "Buzzard Roost" has been changed to "Babcocks Mill" by DNR Forestry.
- Page 48. Harrison Spring National Natural Landmark is not open to the public. Also, the Sphire Tract is no longer owned by The Nature Conservancy. It has been transferred to DNR Forestry.
- Page 49. Orangeville Rise of Lost River is no longer owned by TNC. It is now owned by the Indiana Karst Conservancy. Also, Boone Creek Barrens is owned by the US Forest Service now and thus open to the public.

Part II:

- Page 75. Section 4.3 Strategy #3. Where is the Arrowhead RC&D? I don't know of them being active in this watershed.

Appendices:

- Page 86. Our [The Nature Conservancy, Blue River Project Office] address is PO Box 5, Corydon, IN 47112.
- Page 101. Add the Tippecanoe River as a focus area and change Fish Creek to the Upper St. Joseph River (the Fish Creek project has expanded its reach).